AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning on page 7, line 8, with the following:

[0027] Signals received for an antenna (not shown in FIG. 1) are buffered at the antenna sample buffers(s) 110. The buffered antenna sample signal is provided to the rake fingers associated with a user within the system. Focussing the discussion to a particular rake receiver 120, rake fingers 122A through J each track a different multipath component of the received signal, the initial location of which is determined through the searching process. The number J of rake fingers can be, for example, four or six. The approach for interference cancellation described herein is not dependent on the specific number of fingers ~~receivers~~ 122 within a rake receiver 120.

Please replace the paragraph beginning on page 9, line 26, with the following:

[0037] Adder 32 is coupled to the delay buffer 20 of the rake finger 222A through J, maximizer 31 and tentative decision device (MAP) 30. Tentative decision device (MAP) 30 is coupled to regeneration-factor generator 226 and Walsh encode, spread and scramble device 34, which in turn is coupled to channel estimator 36. Channel estimator 36 is coupled to FHT buffer 112 of the noncoherent Hadamard sequence generator 8. Modified-signal generator ~~1~~228 is coupled to regeneration-factor generator 226, channel estimator 36 and interference estimator 230.

Please replace the paragraph beginning on page 10, line 7, with the following:

[0039] For the first iteration of the interference cancellation process, noncoherent Hadamard sequence generator 8 draws decimated samples from the I and Q antenna sample buffers, 16 and 17. For subsequent iterations, modified estimates of the

interference caused by other users are subtracted from the I and Q antenna samples in buffers 16 and 17, respectively, and the result is passed to decimators 12 and 13. Ordinarily, the decimators 12 and 13 provide the noncoherent Hadamard sequence generator with every ^{8th} antenna sample (corresponding to a single PN chip and assuming 8x oversampling). Decimators 12 and 13, however, can be configured by an early/late tracker (not shown in FIG. 2) to advance or retard by one antenna sample. For example, the spacing between antenna samples may progress as "88888887888888888988888..." where an advance command was received in the 8^{th} PN chip interval and a retard command was received in the 18^{th} PN chip interval.

Please replace the paragraph beginning on page 11, line 27, with the following:

[0044] The decision variables $Z_1, Z_2, \ldots, Z_{64}$ are passed through a tentative decision device 30, which takes the correlation values and produces a soft-estimate of the coded data for the user associated with that rake receiver. The tentative decision device 30 can employ, for example, a suboptimum, reduced-complexity version of the MAP algorithm known as the dual maxima metric generator, described in U.S. Patent No. 5,442,627 issued to Viterbi, which is incorporated herein by reference. The tentative decision device 30 provides outputs to Walsh encode, spread and scramble device 34 and to regeneration-factor generator 226. First, a tentative decision device 30 makes a hard decision on the soft information and provides the resulting data to Walsh, encode, spread and scramble device 34, which then Walsh encodes the data, spreads it using the long code assigned to the particular user, and then scrambles it using the short I and Q codes assigned to the communication system 100. Tentative decision device 30 also provides the soft-estimate of the data to the regeneration-factor generator ~~40~~226. Regeneration-factor generator ~~40~~226 averages the soft-estimate of the data (e.g., the six soft-

estimates corresponding to the six coded bits comprising a Walsh symbol) and the average value is used to form the soft-decision regeneration factor, β_k.

Please replace the paragraph beginning on page 16, line 20, with the following:

[0061] Regeneration-factor generator 326 is coupled to delay buffers ~~1~~414 from the rake fingers 322A through J, and is also coupled to modified-signal generator 328. Modified signal generator 328 is coupled to channel summer 44, which is in turn coupled to interference estimator ~~2~~330. Channel summer 44 provides to the interference estimator 330 a signal that is an estimate of the user's contribution to the transmitted signal. Note that the channel summer 44 is an additional component of rake receiver processor 325 (not initially discussed in reference to rake receiver processor 125 of FIG. 1) that sums the various signal components from the rake fingers 322A through J consistent with the WCDMA standard.

Please replace the paragraph beginning on page 17, line 3, with the following:

[0063] FIG. 8 illustrates a system block diagram of a rake finger for the receiver shown in FIG. 7. Rake fingers 322A through J each include decimators 400 and 402, derotator 404, descrambler 50, channelizer 52 and delay buffer ~~1~~414. Decimators 400 and 402 are coupled to adders 14 and 15~~6~~, respectively. Decimators 400 and 402 are coupled to derotator 404, which is in turn coupled to descrambler 50. Descramble 50 is coupled to scambling sequence buffer 22 and channelizer 52. Channelizer 52 is coupled to channelization code buffer 24 and delay buffer ~~1~~414.

Please replace the paragraph beginning on page 18, line 7, with the following:

[0067] The in-phase channels are multiplied by channelization codes, c_d, from channelization code buffer 24 using multipliers 408A, 408B and 408C. Each DPDCH has a different channelization code. The outputs from multipliers 408A, 408B and 406C are 10 then sent to one of the inputs of "and" gates 410A, 410B and 410C, respectively. The other "and" gate input is sent from a lock detector (not shown), which determines whether the signal is too weak for inclusion in subsequent processing. The outputs from "and" gates 410A, 410B and 410C are then sent to adders 412A, 412B and 412C, respectively. Adders 412A, 412B and 412C sum the outputs from 410A, 410B and 410C over spreading factor (SF) values where SF is the spreading factor used for a particular channel. The outputs from adders 412A, 412B and 412C are then sent to delay buffer ~~1~~414, which delays the signal to align it with the signals from other rake fingers 322. The FIG. 8 lines to and from delay buffer ~~1~~414carry seven channels (six DPDCH's and one DPCCH) as represented by the $+^7$ notation.

Please replace the paragraph beginning on page 19, line 1, with the following:

[0069] One quadrature channel, corresponding to the DPCCH, is multiplied by the channelization code, c_c, from channelization code buffer 24 using multiplier 408G. The output from multiplier 408G is then sent to one of the input of "and" gate 410G. The other "and" gate input is sent from a lock detector (not shown), which determines whether the signal is too weak for inclusion in subsequent processing. The output from the "and" gate 410G is then sent to adder 412G, which sums the output over 256 values (256 is the spreading factor for the DPCCH). The output from adder 412G is then sent to delay buffer ~~1~~414, which delays the signal to align it with the signals from other multipath components.

Please replace the paragraph beginning on page 19, line 19, with the following:

[0071] The rake finger outputs 322A through J are also passed to regeneration-factor generator 326 to form a soft-decision regeneration factor, β, for each of the J multipath components. The regeneration factor, β, is calculated by applying, for example, the hyperbolic tangent function to the soft-decision divided by the noise variance input to the rake finger. Channel estimator 32 can replicate the baseband waveform J times where J corresponds to the number of rake fingers. The replication process forms J multipath components each with complex amplitude. Each component is then delayed by an amount determined by the searcher and early/late tracker and the resulting J waveforms are summed to form an estimate of the received waveform. The output of each rake receiver 322 is passed to interference estimator ~~2~~330 to form the inputs for the next iteration of interference cancellation. The interference estimator 330~~22~~ can be an embodiment similar to interference estimator 230 ~~that described in reference to~~ illustrated in FIG. 4.

Please replace the paragraph beginning on page 20, line 14, with the following:

[0074] After the first regenerative IC iteration, the DPCCH symbol for each user is determined, multiplied by an estimate of the channel gain for each of the four multipath components, and then multiplied by the soft-decision regeneration factor for each path. The result is then sent to channel summer 44. Because there are two user 1 DPDCH symbols per DPCCH symbol, two user 1 DPDCH symbols are estimated and multiplied by the four channel gain estimates and soft-decision regeneration factors. The multiplication result is sent to channel summer 44 and added to the regenerated DPCCH signal to form an estimate of the contribution of user 1 to the received signal. For user 2, there are four DPDCH symbols per DPCCH so the regeneration process is performed on four user 2 DPDCH symbols. The user 2 regenerated signals are passed

to summer 44 which sums the four regenerated DPDCH symbols and one DPCCH and sends the result onto interference estimator ~~2~~330 to estimate the interference for subsequent SD-PIC processing. For example, the signal passed to user 1 will be the original received signal subtracted by the regenerated signal output from the channel summer 44 in the rake receiver for user 2.

Please replace the paragraph beginning on page 21, line 17, with the following:

[00761 In an alternative embodiment, a regenerative IC receiver compatible with the IS-2000 standard can be implemented in a manner similar to that described for the receiver compatible with the W-CDMA standard where the soft-decision regeneration factor is generated by processing the soft-output of the maximal ratio combiner (MRC). FIG. 11 illustrates a system block diagram of a receiver compatible with the IS-2000 standard, according to an embodiment of the present invention. The system block diagram shown in FIG. 11 essentially corresponds to the system block diagram shown in FIG. 7, with the exception of certain components. More specifically, the receiver compatible with the IS-25 2000 standard includes long and short code buffer 22' and Walsh code buffer 24'. In addition, the receiver compatible with the IS-2000 standard includes a block deinterleaver 46~~26'~~, soft-output decoder 29' and signal regenerator 30' within the received-signal regenerator 427~~327'~~. Soft-output decoder 29' can be, for example, a convolutional decoder or turbo decoder. The soft-decision regeneration factor is formed using the soft-output from 30 the soft-output decoder 29'. The decoder can be selected, for example, to match the encoder (not shown in FIG. 11) used on a particular channel. The decoder soft-output from soft-output 29' can be, for example, in the form of the log-likelihood ratio (LLR) for a given symbol.